

**REMARKS**

Claims 1-15 are pending in the present application. Claims 1-15 have all been rejected.

In paragraph 2 of the Office Action, claims 1-2 and 9 were rejected under 35 U.S.C. §112, first paragraph as failing to comply with the enablement requirement. The Office Action contends that these claims contain subject matter that was not described in the specification in such a way that to enable one skilled in the art to make and/or use the invention.

With regard to claims 1 and 2, the Office Action states that these claims recite the limitation of multiple terminals that generate signals using one of one-dimensional Aloha and a two-dimensional Aloha access schemes, and claim 9 recites the limitation of signals being generated using a one of a one-dimensional Aloha and a two-dimensional Aloha access scheme. The Office Action then notes that these terms are "only" briefly described in the summary (paragraph 6 of the specification) describing that the OFDMA scheme may also be employed in conjunction with two-dimensional ALOHA based schemes where data slots are based on both time and frequency. The Office Action then concludes that this hardly gives much explanation about the one-dimensional ALOHA and two-dimensional ALOHA access scheme.

Applicant notes that paragraph 6 of the patent application is not the only paragraph that discusses this feature. Applicant draws the Examiner's attention to paragraph 22 on page 7 which states that it is found that a contention scheme used in conjunction with OFDMA provides substantial improved performance. In particular, it has been found that OFDMA works

particularly well with either a one-dimensional or a two-dimensional ALOHA scheme. For example, at any one time, each remote terminal may compete to access all channels of the OFDMA scheme or only selected contention channels. When a collision occurs, the remote site may try again at a later time and/or on a different channel.

Similarly, the Examiner's attention is drawn to paragraph 25 on page 8 which also discusses the applicability of a one or two-dimensional ALOHA scheme. In particular, paragraph 25 recites that "In frequency division multiple access schemes, typically a different demodulator is required to accommodate each simultaneous user. By contrast, OFDMA may be implemented using only a single demodulator for a plurality or all of the simultaneous users. After demodulation, the signal may be processed using, for example, an N-point discrete Fourier transform (DFT) for N simultaneous users. Where the incoming signal is generated using a random access scheme such as one or two-dimensional ALOHA, the N-point discrete Fourier transform (DFT) is performed for all data slots and an analysis is undertaken to determine collisions. In any event, the Hub 3 need only have a single demodulator to process all incoming OFDMA signals. These systems may be viewed as OFDMA based ALOHA or OFDMA-ALOHA. This scheme has substantial advantages when utilized in a satellite system."

Based on the foregoing, Applicant submits that with regard to claims 1, 2 and 9, the specification provides an enabling disclosure, and respectfully traverses the rejection under 35 U.S.C. §112, first paragraph.

In paragraph 4 of the Office Action, claims 1, 2 and 9 were rejected under 35 U.S.C.

§103(a) as being unpatentable over Breynaert et al. in view of Choudhury et al.

On page 4, the Office Action notes that Breynaert supposedly differs from claims 1, 2 and 9 in that it does not teach multiple terminals that generate signals under one of a one-dimensional ALOHA and a two-dimensional ALOHA access scheme. The Office Action then relies upon the Choudhury reference for disclosing a diversity ALOHA scheme which uses a random access ALOHA scheme based on both frequency diversity and time diversity

In reviewing the Choudhury article, Applicant respectfully traverses this rejection. In particular, the system disclosed in Choudhury randomizes transmission on one dimension, while keeping the second dimension the same for all of the network. From the abstract and the portions of Choudhury referenced by the Examiner (page 451, columns 1-2, first paragraph, and page 454, first paragraph under the heading time diversity), it is clear that there are two options in the Choudhury system. The first option is to transmit at the same time slot but have a random selection of frequency and, the second option is to transmit at the same frequency channel but have a random selection of time slots.

Referring to page 451 under the heading "II. FREQUENCY DIVERSITY", Choudhury states "Suppose there are  $l$  frequency channels, each having the same bandwidth, and that users transmit packets of constant length. The duration  $\tau$  of a packet is the same in all the channels." This corresponds to the first option stated above. Referring to page 454, under the heading "III. TIME DIVERSITY", Choudhury recites "In this scheme we consider a single high-speed satellite channel." This corresponds to the second option stated above.

There is considerable difference between a two-dimensional ALOHA scheme and the system set forth in Choudhury. The diversity system is a different scheme than a pure ALOHA scheme. In a diversity system, multiple copies of the same packet are transmitted for receiving ACK, while in pure ALOHA there is a single message. Diversity is a well-known approach that trades response time with load and is effective only when input load is small enough.

The two-dimensional ALOHA scheme is a major new inventive step. A single message is sent, but, for instance, the time-slot and the frequency channel are both picked randomly. As a result, all the terminals share a single random access resource pool, instead of dividing the terminals into sub-networks (for instance one group for each frequency channel). The increased number of terminals when all the time frequency resources are shared by all the terminals, helps with collision statistics, and reduces response time, due to the fact that time randomization depths can be reduced.

Based on the foregoing, Applicant submits that, claims 1, 2 and 9 would not have been obvious in view of Breynaert and Choudhury. Reconsideration is respectfully requested.

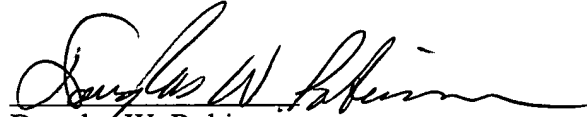
In paragraph 6 of the Office Action, claims 3-6, 8, and 10-15 were rejected under 35 U.S.C. §102(b) as being anticipated by Breynaert. In response, these claims have been canceled without prejudice leaving only claims 1, 2 and 9 pending in the present application.

This amendment is being submitted within the three month period for response to the outstanding Office Action and therefore no extensions of time are deemed to be required. However, the Patent Office is authorized to charge Deposit Account No. 19-0733 any fees

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necessary, except the Issue Fee, to maintain dependency of the present application. If any issues remain which can best be solved by a personal telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the local telephone number listed below.

Respectfully submitted,



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